Changes in Institutionalized Older People's Dentition Status in Helsinki, 2003-2017

Saarela, Riitta K. T.

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may warrant PSA testing to be performed. Nevertheless, our findings, coupled with the evidence evaluating the benefits and risks of prostate cancer screening, demonstrate that prostate cancer screening defined as low value is, indeed, highly prevalent within the Veterans Health Administration.

Thomas R. Radomski, MD, MS and
Walid F. Gellad, MD, MPH
Division of General Internal Medicine, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania
Center for Health Equity Research and Promotion, VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania

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CHANGES IN INSTITUTIONALIZED OLDER PEOPLE'S DENTITION STATUS IN HELSINKI, 2003-2017

To the Editor: Griffin and colleagues[1] investigated changes in tooth loss and whether disparities have persisted among US adults. In their sequential cross-sectional study, they found that tooth loss largely decreased in all groups of noninstitutionalized older adults. As part of a larger study exploring nutritional status and changing nutritional care, we investigated the dentition status of residents in nursing homes (NHs) and assisted living facilities (ALFs) in Helsinki from 2003 to 2017 and found somewhat comparable findings.

See the Reply by Griffin.

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METHODS

We combined six data sets: residents of NHs in 2003 (N = 1987), 2011 (N = 1576), and 2017 (N = 764), and residents of ALFs in 2007 (N = 1377), 2011 (N = 1585) and 2017 (N = 1598). We invited all residents who were 65 years or older and living permanently in these settings to participate. Registered nurses, who had received thorough prior training, collected the data using exactly the same instruments at each time point. The structured questionnaire included information on demographic data, medical history, dentition status, and nutritional status. The Mini Nutritional Assessment (MNA) was used to assess nutritional status.[2] Information on mobility was obtained from an item in the MNA questionnaire, and we categorized this dichotomously into 1 = unable to move independently, and 2 = able to move independently. Medical records were used to retrieve medical diagnoses. Comorbidities were evaluated by the Charlson Comorbidity Index (CCI)[3] that considers both the number and severity of a person's medical conditions. The nurses assessed the residents' dentition status divided into (1) edentulous without dentures, (2) edentulous with some removable dentures, and (3) those with natural teeth with or without dentures. Chewing difficulties were recorded as yes or no according to the nurses' evaluation.

For all four time points of data collection, the local ethics committee of Helsinki University Hospital and the City of Helsinki approved the study protocol. Written informed consent was obtained from the participants or their closest proxies.

RESULTS

The mean age of the residents varied from 83.7 to 84.5 years in the NHs, and 83.0 to 84.3 years in the ALFs between study years (Table 1). Dependency for mobility increased over the years (in the NHs from 30.4% to 60.9%; in the ALFs from 15.0% to 35.4%). The proportion of residents with dementia increased similarly from the first study year (in the NHs from 69.5% to 77.4%; in the ALFs from 59.5% to 80.2%). In 2017, a smaller proportion of residents were assessed as malnourished in NHs than in 2003. In the ALFs, the proportion of malnourished residents had increased from 2007. Edentulousness had decreased from 2003 to 2017 in the NHs from 58.5% to 30.1%. The respective figure in the ALFs had also decreased from 51.8% in 2007 to 37.7% in 2017. However, the proportion of edentulous residents without removable dentures had increased in the ALFs. This had happened among those both with and without dementia (data not shown). Overall, chewing difficulties had increased in both settings.

Table 1. Basic Characteristics of Nursing Home Residents (2003, 2011, and 2017) and Assisted Living Facility Residents (2007, 2011, and 2017)

Nursing home	2003 (N = 1987)	2011 (N = 1576)	2017 (N = 764)	*P* value[a]
Mean age (SD)	83.7 (7.7)	84.5 (7.9)	83.6 (8.2)	.007
Females, %	80.7	77.0	77.1	.015
MNA				<.001
<17 (malnourished)	28.6	31.7	21.6	
17-23.5 (at risk)	60.3	61.8	66.4	
>23.5 (normal)	11.1	6.5	12.1	
Unable to move independently, %	30.4	60.5	60.9	<.001
Dementia, %	69.5	76.5	77.4	<.001
CCI (SD)	2.1 (1.2)	2.3 (1.5)	2.1 (1.3)	<.001
Chewing difficulties, %	24.6	33.1	31.4	<.001
Dentition, %				<.001
Edentulous without dentures	13.6	16.9	13.7	
Edentulous with some removable denture in one or both jaws	44.9	26.5	16.4	
All or some natural teeth left with or without removable denture in one or both jaws	41.5	56.6	69.9	
Assisted living facilities	**2007 (N = 1377)**	**2011 (N = 1586)**	**2017 (N = 1598)**	***P* value[a]**
Mean age (SD)	83.0 (7.4)	84.3 (7.3)	84.3 (7.6)	<.001
Females, %	77.7	78.1	72.4	<.001
Not able to move independently, %	15.0	28.8	35.4	<.001
MNA, %				<.001
<17 (malnourished)	12.7	20.2	16.0	
17-23.5 (at risk)	65.4	61.9	63.1	
>23.5 (normal)	21.9	17.9	21.0	
Dementia, %	59.5	70.2	80.2	<.001
CCI (SD)	2.1 (1.4)	2.4 (1.5)	2.0 (1.3)	<.001
Chewing difficulties, %	20.8	25.1	29.8	<.001
Dentition, %				<.001
Edentulous without dentures	7.2	9.7	13.5	
Edentulous with some removable denture in one or both jaws	44.6	33.5	24.2	
All or some natural teeth left with or without removable denture in one or both jaws	48.2	56.8	62.3	

Abbreviations: CCI, Charlson Comorbidity Index; MNA, Mini Nutritional Assessment; SD, standard deviation.
[a]Differences between the cohorts were tested using the χ^2 test for categorial variables and the Kruskal-Wallis test for non-normally distributed continuous variables.

DISCUSSION

As the study by Griffins and colleagues[1] among non-institutionalized older adults previously found, edentulousness has also decreased among older people in institutional care in Helsinki. Griffin et al. also reported findings among home-limited or long-term care residents from 2011 to 2016. They found that the mean proportion of vulnerable adults who were edentate was 33.2% in nine different states. Although edentulousness is decreasing among institutionalized older people in Helsinki, it is still very common and higher than reported by Griffin and colleagues. At the same time, the proportions of the edentate residents without dentures increased in our samples. This may be due to the increased proportion of residents with dementia. At the severe stage, it may be challenging for them to use dentures. The proportion of edentate residents without dentures may partly explain our finding that chewing problems were more common despite the overall decrease in edentulousness. Another explanation is that after 14 years of our development and educational project in institutional settings, the nurses were more aware of their residents' chewing and nutritional problems. Edentulousness[4] and chewing problems[5] were reported as associated with malnutrition that may lead to functional decline, disability,[6] and reduced health-related quality of life.[7]

Our findings support the need for cooperation between nursing staff and oral healthcare professionals and for providing institutionalized older people with regular oral healthcare services. It is also essential that nurses and physicians are aware of the importance of good oral health for the nutrition and well-being of vulnerable residents in long-term care settings.

Riitta K.T. Saarela, PhD
City of Helsinki, Department of Social Services and Health Care, Oral Health Care, Helsinki, Finland

Kaija Hiltunen, DDS, PhD
Department of Oral and Maxillofacial Diseases, Faculty of Medicine, University of Helsinki, Helsinki, Finland

Päivi Mäntylä, DDS, PhD
Department of Oral and Maxillofacial Diseases, Faculty of Medicine, University of Helsinki, Helsinki, Finland
Institute of Dentistry, University of Eastern Finland, Kuopio, Finland
Kuopio University Hospital, Oral and Maxillofacial Diseases, Kuopio, Finland

Kaisu H. Pitkälä, MD, PhD
Department of General Practice and Primary Health Care, University of Helsinki, Helsinki, Finland
Helsinki University Hospital, Unit of Primary Health Care, Helsinki, Finland

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REPLY TO CHANGES IN INSTITUTIONALIZED OLDER PEOPLE'S DENTITION STATUS IN HELSINKI 2003 TO 2017

To the Editor: Saarela and colleagues[1] raise an important point—decreases in edentulism do not necessarily imply improved quality of life. Their study found that older adults in assisted living experienced a significant decrease in edentulism, which was accompanied by a significant increase in reported chewing difficulties. The authors posit that this may have been due to significant decreases in denture prevalence among the edentate. Based on these findings, we updated our original study[2] to examine the percentage of edentate adults, aged 65 years and older, who had no dentures or full removable dentures among community-dwelling and home-limited or long-term care residents.

METHODS

For community-dwelling adults, we again used data from the National Health and Nutrition Examination Survey (NHANES), a nationally representative survey of noninstitutionalized persons in the United States. Additional information is available at http://www.cdc.gov/nchs/nhanes.htm.

An edentulous person was classified as having full removable dentures if all 28 teeth (second molar to second molar) were scored as missing but replaced with removable restoration and having no dentures if 0 teeth were scored as having removable restorations. For home-limited or long-term care resident adults, we revisited the nine state reports that used the Basic Screening Survey[3] to examine the oral health status of adults primarily living in nursing homes or assisted living facilities.

RESULTS

Nationally, 17.3% of community-dwelling adults, aged 65 years and older, were edentate. Among these persons, 5.4% (SE = 0.8%) had no dentures and 85.8% (SE = 1.6%) had full dentures. Unlike edentulism, where there were large disparities in prevalence by sociodemographic characteristics, there was little variation in the percentage of edentate community-dwelling adults with full removable dentures (Table 1). Prevalence of having full removable dentures among the edentate ranged from 82.5% to 89.2% for all characteristics, except for being Mexican American (prevalence = 78.2%). Four of nine reports for long-term care residents and home-limited adults included in our original study reported denture use among edentate adults. Two states reported the percentage of edentate adults with no dentures—10% and 25%. Two states reported that 50% and 70% of edentate adults had full dentures.

DISCUSSION

There are limited data on the functional status of older adults' dentition. Although with NHANES we could determine the number of missing teeth and presence of dentures for community-dwelling adults, there was no information on whether dentures were worn or if respondents had difficulty chewing their food. There are no corresponding data for older adults in long-term care at the national level. The Centers for Medicare and Medicaid Services requires all certified nursing homes in the United States to perform a comprehensive assessment of each resident's functional capabilities and health and to report this in the Long-Term Care Minimum Data Set (MDS).[4] The MDS, however, only includes one dichotomous variable on oral health status. The Basic Screening Survey for older adults,[3] which has been used by several states, includes information on number of natural

This letter comments on the letter by Saarela et al.

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